

**Section V-B - FM BROADCAST ENGINEERING DATA (Page 3)**

10. Does this proposal modify a new unbuilt construction permit for an unbuilt, unlicensed facility?

☐ Yes ☒ No

If Yes, submit an Exhibit demonstrating compliance with 47 C.F.R. Section 73.3535 that includes a certification that construction will commence immediately upon grant of the construction permit application.

Exhibit No.  
**N/A**

11. Is a directional antenna proposed?

☐ Yes ☒ No

If Yes, attach as an Exhibit a statement with all data specified in 47 C.F.R. Section 73.316, including

Exhibit No.  
**N/A**

12. Will the proposed facility satisfy the requirements of 47 C.F.R. Section 73.315(a) and (b)?

☒ Yes ☐ No

If No, attach as an Exhibit a request for waiver and justification therefor, including amounts and

Exhibit No.  
**N/A**

13. Will the main studio be within the protected 3.16 mV/m field strength contour of this proposal?

☒ Yes ☐ No

If No, attach as an Exhibit justification pursuant to 47 C.F.R. Section 73.1125.

Exhibit No.  
**N/A**

14. Is this application being filed as a One-step proposal pursuant to the Report & Order in MM Docket

☒ Yes ☐ No

If Yes, list the proposed allotment site coordinates to the nearest second below and attach an Exhibit demonstrating that the proposed allotment site is in compliance with the allotment standards. The Exhibit must contain: (1) an allotment site map that complies with the requirements of the April 5, 1985, Public Notice, Mimeo 3693, or a statement that the allotment site will be located on an existing tower; (2) a city coverage map, showing the allotment site is in compliance with 47 C.F.R. Section 73.315; (3) a showing demonstrating that the allotment site meets the minimum distance separation requirements of 47 C.F.R. Section 73.207; and (4) a statement that the proposed allotment site is suitable for tower construction.

Exhibit No.  
**E-1**

Latitude	40°	24'	11"	Longitude	78°	31'	35"
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15. (a) Does the proposed facility satisfy the requirements of 47 C.F.R. Section 73.207?

☒ Yes ☐ No

(b) If the answer to (a) is No, does 47 C.F.R. Section 73.213 apply?

**N/A**

☐ Yes ☐ No

(c) If the answer to (b) is Yes, attach as an Exhibit a justification, including a summary of previous waivers.

Exhibit No.  
**N/A**

(d) If the answer to (a) is No and the answer to (b) is No, attach as an Exhibit a statement describing the short spacing(s) and how it or they arose.

Exhibit No.  
**N/A**

(e) Is authorization pursuant to 47 C.F.R. Section 73.215 requested?

☐ Yes ☒ No

If the answer to (e) is Yes, attach as an Exhibit a complete engineering study demonstrating compliance with the minimum spacing requirements of 47 C.F.R. Section 73.215(e) and lack of prohibited overlap with the affected stations. The engineering study must include the following:

Exhibit No.  
**N/A**

**Section V-B - FM BROADCAST ENGINEERING DATA (Page 4)**

- (1) Protected and interfering contours, In all directions (360°), for the proposed operation.
- (2) Protected and interfering contours, over pertinent arcs, of all short-spaced assignments, applications and allotments, including a plot showing each transmitter location, with identifying call letters or file numbers, and indication of whether facility is operating or proposed. For vacant allotments, use the reference coordinates as the transmitter location.
- (3) When necessary to show more detail, an additional allocation study utilizing a map with a larger scale to clearly show prohibited overlap will not occur.
- (4) A scale of kilometers and properly labeled longitude and latitude lines, shown across the entire Exhibit(s). Sufficient lines should be shown so that the location of the sites may be verified.
- (5) The official title(s) of the map(s) used in the Exhibit(s).

16. Are there: (a) within 60 meters of the proposed antenna, any proposed or authorized FM or TV transmitters, or any nonbroadcast (except citizens band and amateur) radio stations; or (b) within the blanketing contour, any established commercial or government receiving stations, cable head-end facilities, or populated areas; or (c) within ten (10) kilometers of the proposed antenna, any proposed or authorized FM or TV transmitters which may produce receiver-induced intermodulation interference?

☐ Yes ☒ No

If Yes, attach as an Exhibit a description of any expected, undesired effects of operations and remedial steps to be pursued if necessary, and a statement accepting full responsibility for the elimination of any objectionable interference (including that caused by receiver-induced or other types of modulation) to facilities in existence or authorized or to radio receivers in use prior to grant of this application. (See 47 C.F.R. Sections 73.315(b), 73.316(e) and 73.318.)

Exhibit No.  
**N/A**

17. Attach as an Exhibit a 7.5 minute series U.S. Geological Survey topographic quadrangle map that shows clearly, legibly, and accurately, the location of the proposed transmitting antenna. This map must comply with the requirements set forth in Instruction V (D). The map must further clearly and legibly display the original printed contour lines and data as well as latitude and longitude markings, and must bear a scale of distance in kilometers.

Exhibit No.  
**E-3**

18. Attach as an Exhibit (name the source) a map which shows clearly, legibly, and accurately, and with the original printed latitude and longitude markings and a scale of distance in kilometers:

Exhibit No.  
**E-5**

- (a) the proposed transmitter location, and the radials along which profile graphs have been prepared;
- (b) the 3.16 mV/m and 1 mV/m predicted contours; and
- (c) the legal boundaries of the principal community to be served.

19. Specify area in square kilometers (1 sq. mi. = 2.59 sq. km.) and population (latest census) within the predicted 1 mV/m contour.

Area 2413 sq. km.

Population 168,806

20. For an application involving an auxiliary facility only, attach as an Exhibit a map (Sectional Aeronautical Chart or equivalent) that shows clearly, legibly, and accurately, and with latitude and longitude markings and a scale of distance in kilometers:

Exhibit No.  
**N/A**

- (a) the proposed auxiliary 1 mV/m contour; and
- (b) the 1 mV/m contour of the licensed main facility for which the applied-for facility will be auxiliary. Also specify the file number of the license.

# Section V-B - FM BROADCAST ENGINEERING DATA (Page 5)

21. Terrain and coverage data (to be calculated in accordance with 47 C.F.R. Section 73.313)

Source of terrain data: (check only one box below)



Linearly interpolated 30-second database



7.5 minute topographic map

(Source:                     NGDC                    )



Linearly interpolated 3-second database



Other (summarize)

Radial bearing (degrees True)	Height of radiation center above average elevation of radial from 3 to 16 km (meters)	Predicted Distances	
		To the 3.16 mV/m contour (kilometers)	To the 1 mV/m contour (kilometers)
*			
0			
45			
90	SEE	EXHIBIT NO.	E-4
135			
180			
225			
270			
315			

\*Radial through principal community, if not one of the major radials. This radial should NOT be included in the calculation of HAAT.

22. Environmental Statement. (See 47 C.F.R. Section 1.1301 et seq.)

Would a Commission grant of this application come within 47 C.F.R. Section 1.1307, such that it may have a significant environmental impact, including exposure of workers or the general public to levels of RF radiation exceeding identified health and safety guidelines issued by the American National Standards Institute?



Yes



No

If you answer Yes, submit as an Exhibit an Environmental Assessment required by 47 C.F.R. Section 1.1311.

Exhibit No.  
**N/A**

If No, explain briefly why not. **See Exhibit No. E-1**

## CERTIFICATION

I certify that I have prepared this Section of this application on behalf of the applicant, and that after such preparation, I have examined and found it to be accurate and true to the best of my knowledge and belief.

Name (Typed or Printed) <b>Charles I. Gallagher</b>	Relationship to Applicant (e.g., Consulting Engineer) <b>Consulting Engineer</b>
Signature <i>Charles I. Gallagher</i>	Address (include ZIP Code) <b>Gallagher &amp; Associates 13226 Clopper Road Hagerstown, MD 21742-4815</b>
Date <b>April 18, 1997</b>	Telephone No. (include Area Code) <b>(301) 790 - 2611</b>

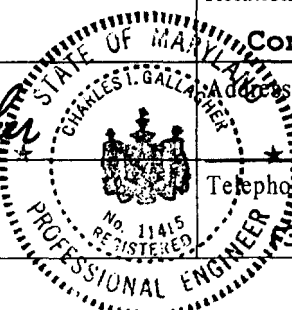


EXHIBIT NO. E-1

ENGINEERING STATEMENT  
IN REGARD TO THE APPLICATION  
FOR CONSTRUCTION PERMIT  
TO CHANGE THE FACILITIES OF  
WBXQ, CRESSON, PENNSYLVANIA  
CHANNEL 234A - 94.7 MHz  
ERP 0.97 kW AT 242 METERS AAT

This engineering statement and associated exhibits have been prepared on behalf of Sounds Good, Inc., licensee of FM broadcast station WBXQ, Cresson, Pennsylvania, to accompany an application for construction permit to improve the facilities. FM broadcast station WBXQ presently operates on Channel 232A (94.3 MHz) with an effective radiated power of 0.35 kW and an antenna height of 292 meters above average terrain (AAT). It is proposed to change transmitting site, change to channel 234A (94.7 MHz) and to operate with an ERP of 0.97 kW and an antenna height of 242 meters AAT. The presently licensed facilities are equivalent to 3 kW at 100 meters AAT and the proposed facilities are equivalent to 6 kW at 100 meters AAT. This engineering report contains Section V-B of FCC Form 301 and the exhibits and data required by that section and the FCC Rules.

It will be noted that the channel change proposed is a change of two channels and therefore complies with the "one-step" upgrade permitted without rule-making. In order to accomplish this channel change it is necessary for WBRX, Patton, Pennsylvania to change its facilities to channel 232A. That is, it is proposed that WBXQ and WBRX swap channels. An application by WBRX for change in channel is being filed simultaneously with this application. Both proposals will comply with the separation requirements of Section 73.207 for full 6 kW class A facilities and will eliminate existing short-spacings, as will be described more fully below.

The swap in channels discussed above has been made possible by a grant of proposed rulemaking to change channel of WKBI-FM, St. Marys, Pennsylvania, from channel 232A to channel

**EXHIBIT NO. E-1****Page 2**

230B1. It is further noted that WKBI-FM has been granted a construction permit, FCC file number BPH-960118IE, for operation on channel 230B1. The present operation of WBXQ is short-spaced to the licensed operation of WKBI-FM, and to WCHA, Greencastle, Pennsylvania, as well as to the licensed site of WBRX, Patton. The geographical coordinates listed at item 14 on Form 301 is the coordinates of the site proposed herein for WBXQ. The use of this site on channel 234A would eliminate the short-spacing to WKBI-FM and WCHA, and would be 30.68 kilometers from the site proposed by WBRX, which, when rounded to the nearest whole kilometer, would comply with the 31 kilometers required by Section 73.207 of the FCC Rules. Further, the operation proposed herein would comply with the separation requirements to all other stations and allotments.

The proposed transmitting site is located in a sparsely populated area and has been selected so as to encompass all of Cresson within the 70 dBu (3.16 mV/m) contour, as required by Section 73.315(a). However, line-of-sight cannot be obtained from the antenna over Cresson. The attached Exhibit No. E-6, tabulates the results of calculations made using the "Longley-Rice" computer program based on the procedures described in "Transmission Loss Predictions for Tropospheric Communication Circuits" by P. L. Rice, A. G. Longley, K. A. Norton and A. P. Barsis, published by the National Bureau of Standards as "Technical Note No. 101". The calculations were made toward Cresson, 7.2 kilometers to 9.9 kilometers from the transmitting site, along the 323° radial, which is typical of all paths toward the city. Page 4 of this exhibit graphs the ground elevation -vs- distance toward the center of Cresson using the 3-second terrain database. This graph also shows the field strength in dBu -vs- distance. At no location within Cresson does the field strength fall below 70 dBu, and at 93% of the locations along the radial in the city, the field strength exceeds 71 dBu. It is therefore concluded that although line-of-sight cannot be obtained over Cresson, the effect of the obstruction to line-of-sight is not sufficient to reduce the field strength to less than 70 dBu and therefore is not considered to be a "major obstruction in this path" within the meaning of Section 73.315(b) of the FCC Rules.

**EXHIBIT NO. E-1****Page 3**

The attached Exhibit No. E-5 is a Department of Commerce Detroit Sectional Aeronautical Chart showing the proposed site, radials used for terrain analysis, the 70 dBu (3.16 mV/m) and 60 dBu (1 mV/m) contours, and the city limits of Cresson, as well as the original printed latitude and longitude markings. The distance to the field strength contours shown were determined in accordance with Section 73.313 of the Commission's Rules using a computer program that duplicates the results that would be obtained from Figure 1 of Section 73.333 of the Rules. The average 3 to 16 kilometer terrain elevation of each radial was computer generated using the National Geophysical Data Center (NGDC) thirty-second data point data base. The population within the 60 dBu (1 mV/m) contour was determined using a computer program that adds the population within the census enumeration districts whose centroids are included within the contour. The area within the contour was determined by the computer using numerical integration and includes land areas only.

In October, 1985, the Commission issued OST Bulletin No. 65, entitled "Evaluating Compliance with FCC Specified Guidelines for Human Exposure to Radiofrequency Radiation". Section 1.1307(b)(1) of the Rules specifies that applications filed before September 1, 1997 must comply with the standards set forth by ANSI C95.1-1982, so the guidelines of OST-65 still apply. The following evaluation is based on worst case figures from Table 1 for FM, page 37, (Appendix B) of OST No. 65. That table shows that an FM station with a combined effective radiated power (ERP) of 3.0 kW (H+V) must have a center of radiation above ground level of at least 10 meters. It is proposed to operate with a combined ERP of 1.94 kW and an antenna height of 28 meters above ground level. A fence or anti-climbing device will be installed to prevent unauthorized access to the tower. As can be seen, the operation as proposed herein will comply with the guidelines in OST-65, since none of the area within 10 meters of the antenna will be accessible to the public. Based on the formulas in OST Bulletin No. 65, and using worse case conditions, the following procedures have been established for workers who must climb the tower. All tower work must be

EXHIBIT NO. E-1

Page 4

scheduled in advance, and arrangements made for a technical representative of the station to be present while tower work is in progress. The station will be operated under local control and the operator on duty at the transmitter site will monitor the location of the workers on the tower, and will adjust the power levels of the transmitter as follows: If the workers are at a distance in excess of 8 meters from the nearest element of the antenna (less than 19 meters from the ground), the transmitter will continue to operate at full power. If the workers are less than 8 meters from the antenna (more than 19 meters above ground), the station will cease operation until the workers descend below this level.

The proposed transmitting site would not involve construction in conflict with any of the conditions described in Section 1.1307 of the FCC Rules. Further, as discussed above, the proposed operation would not involve conflict with Section 1.1307(b) of the FCC Rules. Therefore, pursuant to Section 1.1306(b) of the Rules, any Commission action with respect to this application would be categorically excluded from environmental processing.

It is believed that the operation proposed herein, in combination with the operation proposed in the application by WBRX, Patton, Pennsylvania, will be in accordance with all of the allocation and technical requirements of the FCC Rules governing FM broadcast stations.

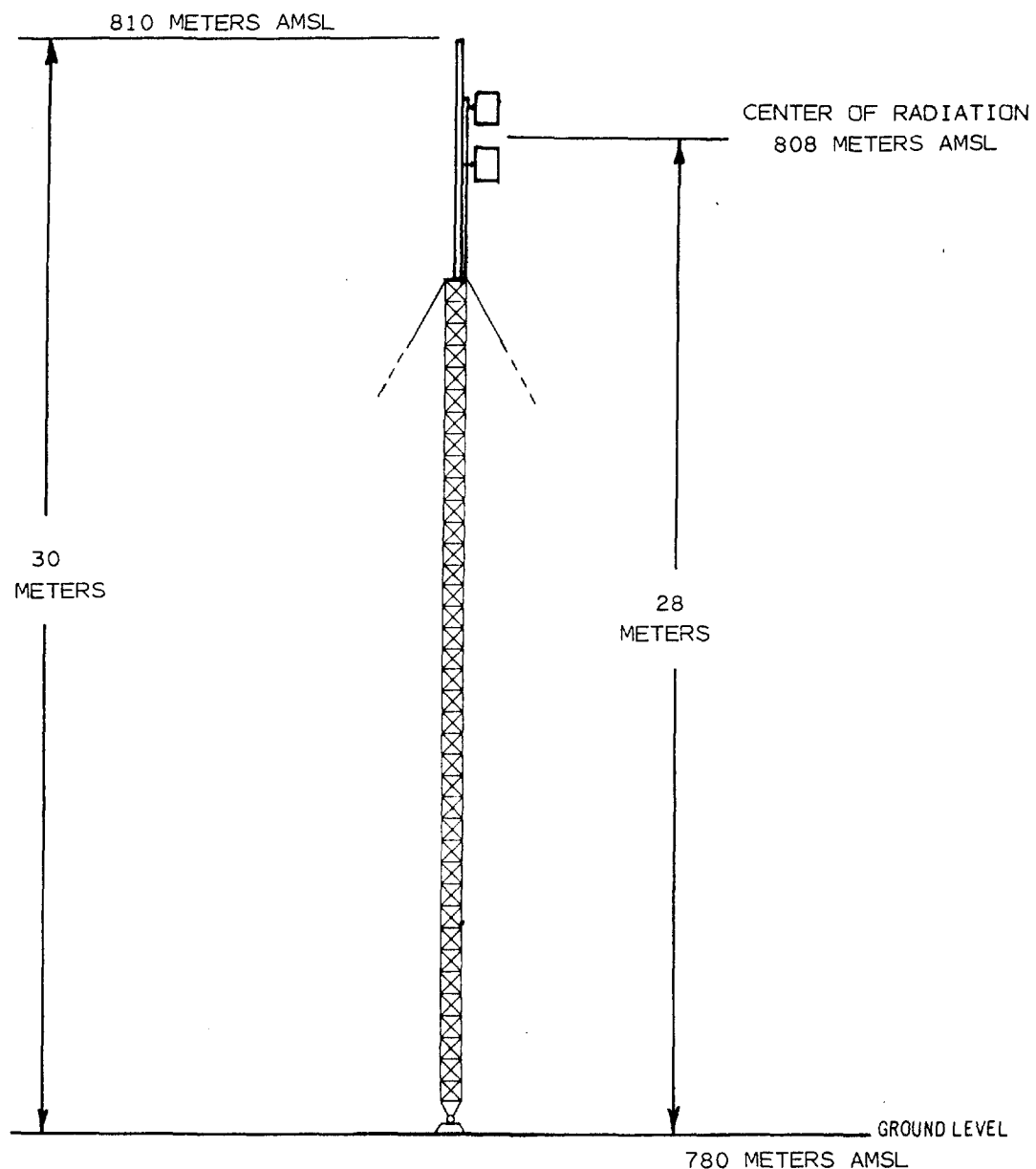
This engineering statement and associated exhibits have been prepared by me or under my direct supervision. I am a Consulting Radio Engineer, and a Registered Professional Engineer in the State of Maryland, Registration No. 11415, and my qualifications are a matter of record with the Federal Communications Commission, having been presented on previous occasions. All data and statements contained herein are true and correct to the best of my knowledge, information and belief.

*Charles I. Gallagher*  
Charles I. Gallagher



April 18, 1997

EXHIBIT NO. E-2



NOT TO SCALE

**GALLAGHER & ASSOCIATES**  
CONSULTING RADIO ENGINEERS HAGERSTOWN, MD

VERTICAL SKETCH  
PROPOSED OPERATION  
WBXQ(FM), CRESSON, PENNSYLVANIA  
94.7 MHz, 0.97 kW at 242 METERS AAT



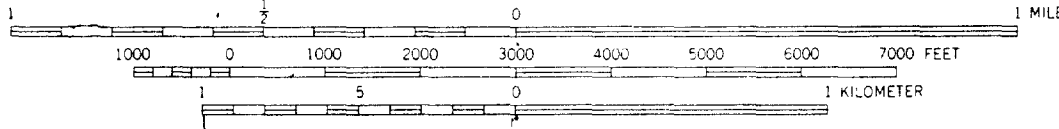
**GALLAGHER & ASSOCIATES**

CONSULTING RADIO ENGINEERS

HAGERSTOWN, MD

**EXHIBIT NO. E-3**

SCALE 1:24 000



CONTOUR INTERVAL 20 FEET  
NATIONAL GEODETIC VERTICAL DATUM OF 1929

STATE GAME LANDS  
NO. 198

**PROPOSED  
SITE**

**CRESSON, PA.**

40078-D5-TF-024  
PHOTOINSPECTED 1984  
1963  
PHOTOREVISED 1981  
DMA 5264 I NE-SERIES V831

**PROPOSED TRANSMITTING SITE  
WBXQ(FM), CRESSON, PENNSYLVANIA  
94.7 MHz, 0.97 kW at 242 METERS AAT**

DUNCANSVILLE 13.8 MI.  
HOLLIDAYSBURG (PA. 36) 6 MI.

4477

25'

4476

4475

4474

4473000m N.

40°22'30"

78°30'

1.9 MI. TO PA 164

32°30"

709

710

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1989

711

712000m E.

**GALLAGHER & ASSOCIATES**

CONSULTING RADIO ENGINEERS

HAGERSTOWN, MD

EXHIBIT NO. E-4

CALCULATED COVERAGE CONTOURS  
PROPOSED OPERATION  
WBXQ, CRESSON, PENNSYLVANIA  
ERP 0.97 KW AT 242 METERS AAT

AZIMUTH DEGREES	ANTENNA HAAT (Meters)	E.R.P. in kW	70 dBu Kilometers	60 dBu Kilometers
0	139	0.970	12.0	21.6
45	405	0.970	20.6	35.7
90	419	0.970	21.0	36.3
135	385	0.970	20.2	34.9
180	204	0.970	14.6	25.7
225	39	0.970	6.3	11.4
270	181	0.970	13.8	24.4
315	166	0.970	13.2	23.4
323*	165	0.970	13.2	23.3

Antenna height above average terrain = 242 meters

\* Radial through principal community, NOT included in average.  
Average figures are expressed to the nearest whole  
number and are based on accuracy to nearest meter.

# GALLAGHER & ASSOCIATES

CONSULTING RADIO ENGINEERS

HAGERSTOWN, MD

EXHIBIT NO. E-5

The field strength contours shown on this map were calculated using the procedures set forth in the FCC Rules. Actual field strengths may be different than shown.

**CALCULATED COVERAGE CONTOURS**  
**PROPOSED OPERATION**  
Channel 234A - 94.7 MHz  
WBXQ(FM), CRESSON, PENNSYLVANIA  
ERP 0.97 kW at 242 METERS AAT

**CRESSON CITY LIMITS**

**PROPOSED SITE**

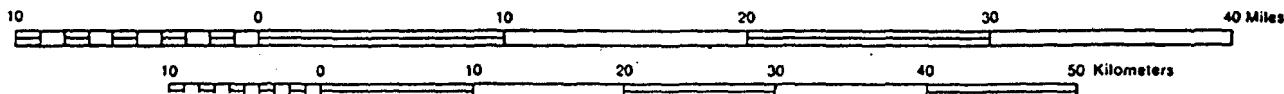
**60 dBu**  
**1.0 mV/m**  
**CONTOUR**

**70 dBu**  
**3.16 mV/m**  
**CONTOUR**

**DETROIT**  
**SECTIONAL AERONAUTICAL CHART**  
**SCALE 1:500,000**

**SCALE 1: 500,000**

**1 INCH REPRESENTS APPROXIMATELY 8 MILES**



# GALLAGHER & ASSOCIATES

CONSULTING RADIO ENGINEERS

HAGERSTOWN, MD

EXHIBIT NO. E-6

Tech Note 101 Study, Longley-Rice Study

COMPUTED FIELD VALUES - LONGLEY-RICE MODEL (VER 1.2.2)

323 Degree Radial

Transmitter Latitude: 40° 24' 11" N Longitude: 78° 31' 35" W  
Transmitter center of radiation: 808.0 m AMSL (28.00 m AGL)  
Frequency: 94.70 MHz; Power: .970 kW  
Receiver antenna: 9.0 m AGL; 1.333 earth curvature

Mode of variability: 11 (Individual mode)  
Confidence: 50.0%, Reliability: 50.0%  
Polarization: Horizontal  
Relative permittivity: 15; Conductivity: .005  
Climate: 5 (Continental temperate)  
Sea level refractivity: 0 Surface refractivity: 301

Distance (kilometers)	TERRAIN (3 Second)	FIELD (dBu)
0.1	755.2	126.79
0.2	765.2	120.77
0.3	765.3	117.25
0.4	762.6	114.75
0.5	760.6	112.81
0.6	759.3	111.23
0.7	754.8	109.88
0.8	747.5	108.73
0.9	733.6	107.46
1.0	715.1	100.31
1.1	693.2	95.29
1.2	669.2	90.99
1.3	643.2	86.86
1.4	618.2	83.89
1.5	595.4	82.19
1.6	597.7	86.44
1.7	615.3	90.42
1.8	643.7	95.24
1.9	674.0	101.17
2.0	698.2	100.77
2.1	718.7	100.19
2.2	730.1	97.60
2.3	732.6	96.47
2.4	735.7	96.82
2.5	742.0	97.38
2.6	744.4	97.70
2.7	744.4	97.56

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EXHIBIT NO. E-6

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Distance (kilometers)	TERRAIN (3 Second)	FIELD (dBu)
2.8	742.4	96.80
2.9	739.4	95.33
3.0	734.5	93.30
3.1	731.0	91.59
3.2	730.9	90.07
3.3	732.2	89.42
3.4	739.6	90.67
3.5	756.8	93.48
3.6	775.3	95.66
3.7	787.5	95.42
3.8	791.0	95.19
3.9	787.8	94.97
4.0	778.2	80.87
4.1	762.1	73.07
4.2	747.2	70.62
4.3	737.0	70.71
4.4	734.3	72.69
4.5	740.1	75.83
4.6	750.9	78.80
4.7	758.3	81.19
4.8	761.0	82.11
4.9	761.0	81.93
5.0	760.1	81.88
5.1	760.0	81.62
5.2	760.5	81.35
5.3	760.2	81.10
5.4	758.4	80.55
5.5	753.6	79.52
5.6	746.9	78.58
5.7	738.4	76.61
5.8	731.1	75.07
5.9	726.8	75.12
6.0	721.8	74.73
6.1	716.4	74.53
6.2	711.7	74.90
6.3	707.6	74.67
6.4	703.5	74.65
6.5	699.5	74.24
6.6	696.0	74.22
6.7	694.2	74.60
6.8	693.8	75.32
6.9	695.3	76.20
7.0	697.6	77.20
7.1	698.8	77.83
7.2	699.6	77.93
7.3	698.5	77.62

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EXHIBIT NO. E-6

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Distance (kilometers)	TERRAIN (3 Second)	FIELD (dBu)
7.4	694.2	76.96
7.5	686.8	75.84
7.6	679.2	74.40
7.7	672.8	73.06
7.8	667.7	73.10
7.9	660.9	72.15
8.0	654.0	71.15
8.1	647.1	70.37
8.2	642.1	70.30
8.3	640.3	71.17
8.4	639.9	72.23
8.5	638.9	72.66
8.6	638.3	73.11
8.7	635.7	73.04
8.8	634.0	73.15
8.9	631.8	72.97
9.0	628.7	72.70
9.1	625.1	72.35
9.2	620.8	71.75
9.3	618.2	71.22
9.4	615.6	71.08
9.5	614.3	71.27
9.6	612.8	71.38
9.7	611.3	71.58
9.8	609.7	71.71
9.9	608.9	71.82
10.0	608.1	72.08

